

## Wood Products Analysis

A committee of the American Society of Civil Engineers (ASCE) plans to review a draft of a new standard for engineered wood construction and submit the standard for ballot late in 1991. In the interim, the committee has published a pre-standard report, *Load and Resistance Factor Design for Engineered Wood Construction*, a segment of which incorporates NASA technology related to statistical distribution. This technology quantifies wood product reliability with a high degree of confidence, accounting for sampling variability.

Additionally, Dr. Joseph F. Murphy, chairman of the ASCE committee and president of Structural Reliability Consultants, Madison, Wisconsin, made use of the same technology in developing a computer program for analyzing the distribution of wood resistance. Below, Dr. Murphy is shown with a representation of his computer program, which creates graphic plots showing the statistical parameters of glue laminated timbers, or "glulam." At right is an example of such products, the huge curved glulam beams of the U.S. Department of Agriculture's Forest Products Laboratory (also in Madison) that extend across a wide ceiling and allow uninterrupted interior space in the facility.

Dr. Murphy read in *NASA Tech Briefs*, a publication that describes NASA technology avail-

able for transfer, about work related to analysis of Space Shuttle surface tile strength performed for Johnson Space Center by Rockwell International Corporation. The analysis led to a theory of "consistent tolerance bounds" for statistical distributions, applicable in industrial testing where statistical analysis can influence product development and use.

Dr. Murphy obtained from NASA a Technical Support Package (TSP) that covers the subject in greater detail than the Tech Briefs report. The TSP provided information used by the ASCE task committee in compiling its pre-standard report, and it also became the basis for Dr. Murphy's computer program PC-DATA™, which he is marketing commercially.

™ PC-DATA is a trademark of Structural Reliability Consultants.

